

## REMARKS

Applicant thanks the Examiner for her careful consideration of this case.

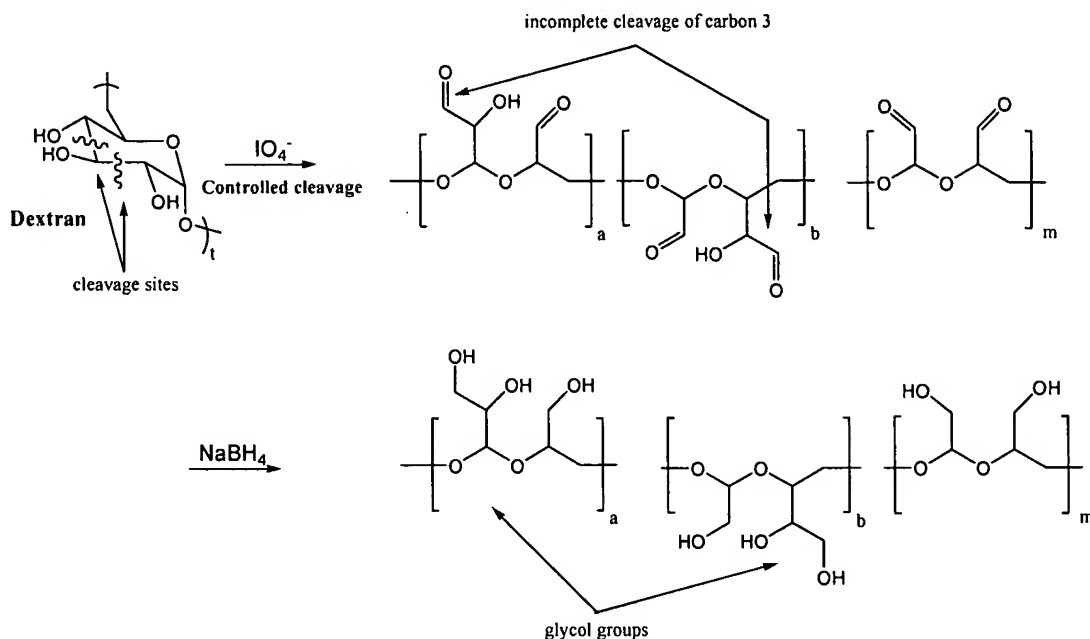
Claims 1-10 are currently pending in the application. Claims 1-10 stand rejected under 35 U.S.C. § 112 first and second paragraphs. In addition, claims 8-10 are rejected under 35 U.S.C. § 102(b) or (e).

### Amendments to the Claims

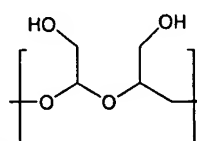
Claims 1-4 and 7-10 have been amended; and claim 11 has been newly added. Claims 5 and 6 remain unchanged. Applicant respectfully submits that no new matter is added through the proposed amendment to the claims. Specifically, claim 1 has been amended to depict with more clarity the structure of polyacetal derivatives derived from exhaustive lateral oxidative cleavage of dextran. The amendment is fully supported by the specification as filed. For example, support can be found in original claim 1 and the description of Fleximer1 and Fleximer2 in paragraphs [0061]-[0063] of the specification. Support for the “maleimidocarboxylate” language can be found, for example, in paragraph [0048] of the specification where it is recited that a maleimidocarboxylic acid can be used as bifunctional reagent for conjugating proteins to polyacetals. In addition, claim 1 has been amended to correct a clerical error in the recitation of the range for m:n. Specifically, the upper range limit was inadvertently omitted at the time of filing. Specific support for m:n reaching 1:25 can be found in paragraph [0062] of the specification. One of ordinary skill in the art would recognize that paragraph [0062] describes a maleimido-functionalized polyacetal as claimed in claim 1 where the theoretical ratio m:n (based on 100% reaction yield) is 3.96:100 (*i.e.*, 1:25).

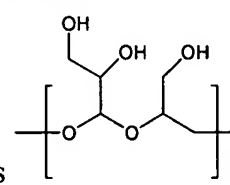
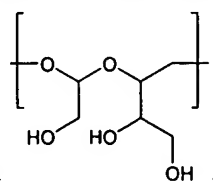
Claim 2 has been amended to correctly depict the structure of polyacetal derivatives derived from controlled lateral oxidative cleavage of dextran. The structure of claim 2, as originally filed was erroneous (the glycol groups were missing, and the side chain sites of attachment were incorrect). Claim 2, as amended, is fully supported by the specification as filed, for example in the description of FleximerG20 and FleximerG50 in paragraphs [0064]-[0065] of the specification. Further support can be found in paragraph [0049], which discusses the formation of vicinal glycol polymer units via incomplete (controlled) lateral cleavage of dextran. One of ordinary skill in the art will understand that the chemistry described *in words* in

paragraphs [0064]-[0065] can be described *by way of chemical structures* by the following scheme:



As described in paragraph [0049], a periodate:glucose monomer molar ratio < 2:1 results in ring opening without complete cleavage of carbon 3 in a subset of carbohydrate units. Therefore, one of ordinary skill in the art will understand that the glycol polyacetal of claim 2, as

described in paragraphs [0064] and [0065], is a polyacetal comprising  and glycol

monomeric units  and .

Claims 3 and 4 have been amended to more clearly set forth what Applicant regards as the invention. Claim 7 has been amended to correct the language “conjugate selected from the group consisting of claims 3 and 4” to “conjugate of claim 3 or 4.” Claims 8-10 have been re-written in dependent form. New claim 11 finds support *inter alia* in original claim 8 and Example 5. New claim 12 finds support *inter alia* in original claim 1 and in paragraphs [0061] through [0063].

No new matter is being introduced by these amendments. Applicant is submitting the present amendments without prejudice to the subsequent prosecution of claims to some or all of the subject matter which might be lost by virtue of this paper, and explicitly reserves the right to pursue the subject matter of any of the canceled claims, or some or all of the subject matter which might be lost by virtue of this paper, in Continuation Applications.

Below we address each of the rejections stated in the Office Action as if it were applied to the newly amended claims.

**1. Specification**

The Examiner has objected to the specification as failing to provide antecedent basis for the claimed subject matter. Specifically, the Examiner states that the polymer structures of claims 1 and 2 are not described in the specification.

Applicant respectfully disagrees. While the chemical structures are not *explicitly* disclosed in the specification, *constructive* disclosure of the structures is provided in Example 1. Therefore, the structures of claims 1 and 2 find clear basis in the specification. Applicant respectfully requests that the objection be withdrawn.

**2. Rejection under 35 U.S.C. § 112, first paragraph**

The Examiner has rejected claims 1-10 under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement.

Applicant strongly disagrees; the claims are fully enabled by the specification. As detailed above, Example 1 alone provides ample enabling support for claims 1 and 2.

In addition, Examples 2 and 5, and paragraphs [0043] through [0050] provide ample enabling support for polyacetal- protein conjugates, as claimed in claims 3 and 5. Specifically, paragraphs [0044] and [0048] teach the conjugation of proteins to maleimido-containing polyacetal derivative, as claimed in claim 1. Paragraphs [0084]-[0099] describe specific reaction conditions suitable for the conjugation. Paragraphs [0049] and [0100] through [0108] provide ample enabling support for the polyacetal derivative of claim 2 and the polyacetal- protein conjugates, as claimed in claims 4 and 6. One of ordinary skill in the art, in light of the instant specification, would know how to make and use the polyacetal derivatives and polyacetal-protein conjugates of the claimed invention.

The processes of claims 8 and 11 are specifically described in Example 5. Thus they are fully enabled.

In addition, Applicant submits that the rejection of claims 9 and 10 under 35 U.S.C. § 112, first paragraph is now moot in view of the amendments to these claims. Claims 9 and 10 are drawn to methods of using polyacetal-IL-1ra and polyacetal-leptin conjugates derived from the polyacetal derivatives of claim 1 or 2. Methods of preparation of these specific polyacetal conjugates are described in Examples 2 and 5 (See Fleximer1-leptin, Fleximer2-leptin, Fleximer1-IL-1ra, Fleximer2-IL-1ra, FleximerG20-IL-1ra and FleximerG50-IL-1ra). Therefore, the claims, as amended, meet the enablement requirement. Applicant respectfully requests that the rejection be withdrawn.

## **2. Rejection under 35 U.S.C. § 112, second paragraph**

The Examiner has rejected claims 1-10 under 35 U.S.C. § 112, second paragraph as being indefinite. The Examiner states that the polymer structures of claims 1 and 2 are not understood because the variables m, n, a and b are not defined. Variables a and b are no longer used in the claims, so the rejection is now moot with respect to them. Thus, the following remarks in response to this rejection relate to variables m, n and p, as recited in the instant claims.

This rejection is respectfully traversed and reconsideration thereof is respectfully requested. The structures of claim 1 and 2 are drawn according to polymer chemistry conventions, and thus they are perfectly clear to one of ordinary skill in the art (a polymer chemist). The description of variable p as an integer is sufficient in and of itself, particularly in light of patent Nos.: 5,811,510; 5,863,990 and 5,958,398. In addition, ranges for m:n are provided. Therefore, the claimed polyacetal derivative structures are perfectly clear to the skilled practitioner.

The rejection of claim 7 is now moot in view of the claim amendment. Similarly, rejection of the claims to polyacetal-protein conjugates are rendered moot by virtue of the claim amendments.

Applicant respectfully requests that the rejection be withdrawn.

## **3. Rejection under 35 U.S.C. § 102**

The Examiner has rejected:

(i) claim 8 under 35 U.S.C. § 102(e) as being anticipated by Brocchini *et al.* (US 2002/0082362);

(ii) claim 9 under 35 U.S.C. § 102(b) as being anticipated by Friedman *et al.* (US Patent No.: 6,048,837); and

(iii) claim 10 under 35 U.S.C. § 102(e) as being anticipated by Boone *et al.* (US Patent No.: 6,294,170).

The Brocchini *et al.* reference does not disclose polyacetal derivatives as claimed in claims 1 or 2. Therefore, the stated rejection of claim 8 is rendered moot in view of the claim amendments. Likewise, new claim 11 is novel over Brocchini *et al.* reference.

The Friedman *et al.* and Boone *et al.* references do not disclose polyacetal-leptin conjugates derived from conjugation of leptin with the polyacetal derivative of claim 1, or polyacetal-IL-1ra conjugates derived from conjugation of IL-1ra with the polyacetal derivative of claim 1 or with the oxidized product of the polyacetal derivative of claim 2. Therefore, the stated rejection of claims 9 and 10 is rendered moot in view of the claim amendments.

Applicant respectfully request that the rejection of record be withdrawn.

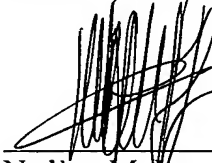
## CONCLUSION

Applicant thanks Examiner Zemel for her time and consideration. In light of the foregoing Remarks, Applicant respectfully submits that the present application is in condition for allowance; a Notice to that effect is respectfully requested.

If a telephone conversation would help clarify any issues, or help expedite prosecution of this case, Applicant invites the Examiner to contact the undersigned at (617) 248-5150.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that any additional fees are required for consideration of this paper (including fees for net addition of claims), these fees are authorized to be charged to our Deposit Account No. 03-1721.

Respectfully submitted,  
CHOATE, HALL & STEWART LLP

  
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